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ABSTRACT

To reduce the confusion existing in adult education as to the merits of various research paradigms, two philosophies of science (logical positivism and phenomenology) were juxtaposed. Their relationship to three common methodologies (empiricism, ethnomethodology, and grounded theory) of adult education were explored. It was concluded that methodological conflict is essentially counterproductive and serves only to conceal the complementary nature of research methodologies. Further, the diversity of research paradigms in adult education could provide the creative tension for theory formation and the subsequent growth of adult education as a discipline. To manage such diversity, however, would require a holistic perspective to integrate the seemingly diverse and disparate data into meaningful theory. It was suggested that one paradigm that could accomplish this integrative function is general systems theory. (Author/YLB)

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RESEARCH PARADIGMS IN ADULT EDUCATION:
PHILOSOPHICAL DIFFERENCES AND COMPLEMENTARY METHODOLOGIES

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ABSTRACT

Considerable confusion exists in adult education as to the merits of various research paradigms. In the hopes of reducing this confusion two philosophies of science (logical positivism and phenomenology) were juxtaposed and their relationship to three common methodologies (empiricism, ethnomethodology and grounded theory) of adult education were explored. It was concluded that methodological conflict is essentially counterproductive and serves only to conceal the complementary nature of research methodologies. Further, the diversity of research paradigms in adult education can provide the creative tension for theory formation and the subsequent growth of adult education as a discipline. To manage such diversity, however, requires a holistic perspective to integrate the seemingly diverse and disparate data into meaningful theory. It was suggested that one paradigm that could accomplish this integrative function is general systems theory.

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RESEARCH PARADIGMS IN ADULT EDUCATION: PHILOSOPHICAL DIFFERENCES AND COMPLEMENTARY METHODOLOGIES

Much debate and controversy has waged over the merits of apparently conflicting research paradigms and methods used to generate both fact and theory. Although the conflict between research methods in adult education has not been as acrimonious as in other areas of social science research, confrontational positions as to what methods should be employed appear to exist. Such positions can only prove to be counterproductive. The adoption of one method while dismissing the validity of another can only perpetuate a narrow and predjudical view of the human phenomena and the world we live in. In order to overcome some of the confusion regarding the relative validity of research paradigms this paper will examine the philosophical assumptions of different methodologies employed in adult education.

To provide such a perspective on the research process an exploration of some of the presuppositions and basic assumptions of logical positivism and phenomenology will be presented. These two philosophies have attempted to lay the foundation for the acquisition and analysis of human knowledge. It will be shown that real and substantive differences exist in their basic assumptions. Following this three methodologies will be explored in an attempt to show the similarities and differences in the actual conduct of valid research. Finally, the third section will present a paradigm in which to view holistically the previously discussed research methodologies.

Two Philosophical Perspectives

The two historical philosophical perspectives that have created so much discussion and controversy regarding metaphysical and epistemological questions are logical positivism and phenomenology. At the outset it must be realized that it is an impossible task to give both a brief and accurate sketch of these philosophies. This is due to the general complexity of their philosophical positions as well as the evolvement of their ideas toward less extreme and more compatible positions. A clearer contrast can be made between the two philosophies by way of analyzing their "original" assumptions. This may, in turn, result in a better understanding of current methodologies in use in adult education today. The first philosophical position to be explored is that of logical positivism.

Logical Positivism

The logical positivist position was initially developed by Wittgenstein and Carnap in the 1930's. The anticedents of positivism can be found in Hume and Compte, while the need for a logical (i.e., noncontradictory) connection of observables and ideas can be traced to Leibniz and Russell (Feigl, 1981, p. 21).

Logical positivism is concerned only with knowledge of the world that is open to observation. Anything that transcends the objective (physical) world is not considered within the bounds of scientific investigation. This movement identified itself only with the properties and relations of the objectively observable world. The world of subjective reflection was considered in the realm of metaphysics and thus had no place in logical positivism.

For the logical positivist, meaning results only from the ability

to verify a statement. More importantly, the method of verification is to ground a statement in observable or empirical reality. This represents a complete rejection of metaphysics or a priori knowledge. Metaphysics, according to positivism, says nothing about the physical world and can lead only to unanswerable (i.e., unverifiable) questions which are factually meaningless.

Due to this insistence on verification a connection has to be made between direct observation and theoretical formulations. Within the early logical positivist paradigm the truth of a theory can never be verified because it does "not have direct empirical reference" (Hesse, 1969, p. 91). Theory can, however, be "confirmable" by logical relations with direct observation. The following passage reveals the relationship between observation and theory within the logical positivist position:

> 1. There are observation predicates, which have direct empirical reference. These are variously identified in terms of sense data or the 'thing language' of ordinary descriptive discourse.
> 2. There are observation statements, containing observation predicates, whose empirical truth or falsity is directly determinable (they are directly verifiable or falsifiable) when the relevant empirical situation is presented.
> 3. Science also employs theoretical predicates, which do not have direct empirical reference. These must be given meaning in some fashion through observables.
> 4. Finally, science employs theoretical statements, which are not directly confirmable or falsifiable, and which must

be shown to be indirectly confirmable or falsifiable through their logical relations with observation statements (Hess, 1969, pp. 87-88).

This clear separation of objective reality and subjective reflection raised some questions, particularly concerning the development and verification of theory. Strictly speaking, theories cannot be verified because they are not observation statements. Meaning of a theoretical statement can result only from the logical analysis of their connection to observable statements. However, since there always exists the possibility of exception in a theoretical formulation that relates to the physical world, the verification principle was replaced with the falsification principle. But here again a negative outcome does not mean the theory is absolutely false. Total certainty appeared to be unattainable in either case.

The meaning and justification of a theory cannot be accounted for by the criteria of empirical meaning. Neither the criteria of verifiability or falsifiability could "tell us whether any parts of a theory were more highly confirmed by observables than others, what the criteria for a good theory would be, supposing its observed consequences to be true, nor how to choose between theories with the same observed consequences, all of which are true" (Hesse, 1969, p. 92). If theory is not essentially verifiable then some other method is required to provide empirical meaning to a theory, or a better understanding and justification of theory formation is required that fits the reality of this process.

The bind the logical positivists found themselves in was that theory could not be directly confirmable from empirical data and

therefore according to their own assumption theory must be meaningless. The obvious need to explain the process of developing theory using qualitative means could not be accepted by the logical positivists. Theory is not within direct reach of observation, and therefore, the technique of formulating theories and hypotheses will depend largely "upon the intuition of the man of research" (van Laer, 1963, p. 118). Kuhn (1962, p. 125) states that he finds it impossible to relinquish the viewpoint that theories are simply man-made interpretations of given data.

This question of man's role in a scientific endeavour leads us to phenomenology as a reaction to the physicalism of logical positivism.

Phenomenology

The philosophy to be outlined next is essentially that of Edmund Husserl who is considered the inaugurator of the phenomenological movement. Although phenomenology consists of many strains "there is a unity in both Husserl's thought and in phenomenology in general which gives it a philosophical momentum and preserves it from doctrinal fragmentation" (Natanson, 1973, p. 24). It is for this reason we will examine Husserl's work for an understanding of phenomenology.

Husserl's phenomenology was a reaction to the empiricist tradition of separating the physical or natural world from human consciousness. In addition, contrary to logical positivism, phenomenology advocated the philosophical analysis of assumptions. Phenomenology was an interpretation of human involvement in the physical world. Reality in phenomenology is dependent upon the apperception and interpretation of a conscious human being. Further, one of the central themes is a suspension of judgement about the

reality of the physical world.

Phenomenological reduction temporarily eliminates the empirical or outer world by "bracketing" any presuppositions or beliefs. This is not a denial of the outer world but a natural a priori acceptance of the world in order to reveal the presuppositions of consciousness. The purpose of this bracketing of the outer world is to allow a purely logical philosophical analysis independent of factual states such that attention can be fixed upon the processes of human consciousness. The starting point of knowledge is found in the understanding of the processes of human consciousness as it searches for the meaning of phenomena. The individual is the centre of philosophical experience and must be open and aware of his/her own life and take nothing for granted in the persuit of knowledge and meaning. In general, the phenomenologist attempts "to elucidate and bring to a coherent order that which daily life takes for granted" (Natanson, 1973, p. 22).

Phenomenology emphasizes how human beings consciously confront and are confronted by phenomena. Phenomena are analyzed logically in terms of their essential structures "which can be intuited quite apart from the senses" (van Peursen, 1972, pp. 44-45). This investigation and analysis of the essence of the given reality is another integral theme of phenomenology. The manifest role of intuition should also be noted in the investigation and apprehension of essences. Intuition is the necessary condition for locating the experiential world and the investigation and apprehension of essences.

The role of intuition in the phenomenological philosophy precludes the empirical verification of its results. As Natanson (1973) states:

> ... the phenomenologist is deeply interested in the logic of prepredictive experience, in passive syntheses of meaning, in the covert no less than the overt aspect of action, and in the many facets of intentionality which are involved in tracing out the sedimentation of meaning. Empiricism begins where phenomenology leaves off - that is why it is pointless to ask the phenomenologist for some sort of equivalent for empirical verification. (p. 33)

The philosophical polarity that logical positivism and phenomenology exhibited in the early 1930's revealed dramatic differences. Movements in both philosophical camps have since modified their positions to a point where a confusing variety of philosophical offshoots exists. However, the value of describing these early positions not only gives an historical perspective which provides some clarity and simplicity, but will allow us to show that the practice of research does not adhere strictly to one or another of these positions. Current methodologies are far more eclectic in their practices. This is not only due to pragmatic concerns but is also likely a result of contemporary philosophical positions of science that have recognized the worth of both qualitative (theoretical) and quantitative (empirical) forms of information.

One of the central themes of this paper is the explanation and justification of theory development in both the physical and social sciences. Logical positivism was essentially concerned only with the hypothetico-deductive aspects of empirical science. The difficulty of this position was accounting for the process of theory formation and its verification. It is clear today that empirical methodologies have

largely abandoned the "false assumption that observational categories are independent of theoretical ones" (Hughes, 1980, p. 129) and the search for absolute knowledge (Heisenberg, 1958). The inability of positivism to account for intuition and insight in the creative process of theory and hypothesis formulation and the rejection of the notion of absolute knowledge questioned its ability to account for the practice of scientific enquiry. Positivism would not claim to know how a hypothesis was arrived at; it would seem, however, that "ultimately the hypothesis arises through intuition" (Strasser, 1963, p. 172). The activities of researchers seldom meet the formalized criteria of the hypothetico-deductive (positivistic) method; "even those who actually work in the 'hardest' sciences now are often satisfied with claiming no more than 'good reasons' and probable knowledge" (Holton, 1978, p. xiv).

Phenomenologists accepted the intuitive and reflective abilities of conscious man to understand and explain phenomena. In this assumption they attempted to explain theory formation but in the process reduced meaning and reality to the psychological or consciousness of man. There existed no comparison to the physical or social world to validate theory but instead relied solely on the apperception and reflection of the individual to provide order and structure.

The methodologies to be discussed next, although aligned with one or the other of these two philosophical perspectives, are not mutually exclusive in terms of their basic assumptions.

Three Methodologies

Research methods used in adult education are usually classified according to whether they are quantitative (hypothetico-deductive) or qualitative (intuitive) methodologies. Also, these two classifications often represent a one to one relationship with logical positivism and phenomenology. However, upon closer examination it will be shown that this dichotomous classification breaks down. In this section three methodological models will be presented that will demonstrate the difficulty of classifying methodologies in such a simplistic manner. It will also be seen that each of the methodologies exhibit many common characteristics.

Before presenting a model seen to be largely empirical in nature it may be worthwhile to restate the essential positivistic position. The focus of positivistic research is to verify theory by logically deducing hypotheses and confirming their consequences through empirically observable data. If the fundamental hypotheses are confirmed then the theory itself will be "confirmed".

Kemeny (1959) reveals the cyclical method of the working researcher in science. It is interesting to note the integration of the inductive (interpretation/explanation) and deductive (prediction) processes. The process begins with facts and ends with facts.

> First of all the scientist is an observer. Next he tries to describe in complete generality what he expects to see in the future. Next he makes predictions on the basis of his theories, which he checks against facts again. (Kemeny, 1959, p. 85)

This continuous process is represented by Kemeny (1959, p. 86) in

Figure 1.

(insert Figure 1 here)

It should be emphasized that the theoretical world and the empirical are distinctly separated by the horizontal line. Also, it is noteworthy that an inductive process is included in this model linking the world of facts with the world of ideas. Kemeny (1959) admits that "establishing a connection between these two worlds is one of the most difficult tasks a scientist must face" (p. 89). He also makes it clear that any observation is an interpretation of what was seen. This of course sounds somewhat metaphysical and raises the problem as to how close must theory be to fact for it to be inductive and not intuitive. In fact, although Kemeny uses the word induction, he clearly states that the formation of theory and hypotheses is a creative process and cannot be explained. The point of this discussion is simply to demonstrate how empirical methodologies have pragmatically accepted processes that were not strictly within the domain of logical positivism. We move next to a methodology clearly aligned with the perspective of phenomenology.

Perhaps the most recognizable methodology that claims to be generic to phenomenolgy is ethnomethodology. However, before we examine the similarities and differences between ethnomethodology and phenomenology, an overview of this methodology will be presented.

Ethnomethodology is associated with Harold Garfinkel and his work in sociology. The term ethnomethodology "refers to the study of the

procedures (methodology) employed by everyday man (ethics) in his effort to meaningfully cope with the world" (Lyman and Scott, 1970, p. 25). The process ethnomethodologists use is a commonsense examination of how people explain order in their own world.

Bracketing is a central theme in phenomenology. "The ethnomethodologist", according to Skidmore (1979, p. 236), "finds it important to reject preconceived ideas of the nature of social order". This is in essence the process of bracketing preconceived ideas about reality. The goal in ethnomethodology is to discover what the participants think about their behavior and why they act in a certain manner. The social order that does exist arises from sustained personal interaction and not from abstract sociological properties of interaction. It is appearance, and not higher-level order, that characterizes human relations. Rationally reconstructed theories of social order do not reflect the mental attitudes, presumptions, and actions of the normal participant (Skidmore, 1979).

In summing up it should be noted that ethnomethodology has moved away from pure phenomenology where mind constitutes our knowledge of the world. It has moved into the physical world where subjective meaning is interpreted according to social action. Ethnomethodology, in fact, has attempted to do objective enquiry by deriving data directly through individual perception. Thus, ethnomethodology exhibits characteristics of both the phenomenological and positivistic traditions.

The result of the above position is a methodology that is very strong at the concrete level but leaves a methodological vacuum at the theoretical level. The next section considers a methodology, grounded

theory, whose major goal is building theory with the use of both qualitative and quantitative observation and data.

Grounded theory is an inductive method of generating theory from both qualitative and quantitative data such that "one can be relatively sure that the theory will fit and work" (Glaser and Strauss, 1967, p. 1). Glaser and Strauss (1967) emphasize the superiority and longevity of theory generated from data over the dubious fit and working capacity of logico-deductive theory based on grounded assumptions. Grounded theory provides the means to systematically and rigorously collect, code, and analyze both qualitative and quantitative data. The position that Glaser and Strauss (1967) take is that "there is no fundamental clash between the purposes and capacitities of qualitative and quantitative methods or data" (p. 17). They go on to state:

> What clash there is concerns the primacy of emphasis on verification or generation of theory - to which heated discussions on qualitative versus quantitative data have been linked historically. We believe that each form of data is useful for both verification and generation of theory, whatever the primacy of emphasis. Primacy depends only on the circumstances of research, on the interests and training of the researcher, and on the kinds of material he needs for his theory.
>
> In many instances, both forms of data are necessary - not quantitative used to test qualitative, but both used as supplements, as mutual verification and, most important for us, as different forms of data on the same subject, which,

when compared, will each generate theory ... (Glaser and Strauss, 1967, pp. 17-18)

The method of grounded theory is relevant when theory generation takes precedence over theory verification. It should be noted that because of its concern with the inductive process of theory generation and emphasis on qualitative methods, it is more or less aligned with the phenomenologists philosophical position. However, by advocating the use of quantitative data for theory generation as well as suggesting the use of qualitative data for theory verification, this method has integrated aspects of two philosophical positions. In addition, grounded theory can be "used as a fuller test of a logico-deductive theory pertaining to the same area by comparison of both theories" (Glaser and Strauss, 1967, p. 29). Thus both logico-deductive and grounded theory methods are complementary in nature and provide a better means to further the development of valid theory.

Although researchers using this design have a particular perspective, they begin the study without any preconceived theory. The first stage of theory development is generating conceptual categories and their properties, and secondly, generalizing relations (i.e., hypotheses) among the categories and their properties. Generating conceptual categories and properties systematically are achieved through the constant comparison of data or incidents. The constant comparative method of jointly coding data or incidents (i.e., category placement) and analyzing it at the same time provides for provisional testing and suggestion as to categories, properties, and hypotheses. Comparisons determine the similarities and differences of data or

incidents with themselves or with properties of a category. This constant comparison tends toward the development of theory.

One final comment concerns the issue of when the analyst feels that credible grounded theory has been generated. The following passage by Glaser and Strauss (1967) suggest when the research should be brought to a close which is also integrally related to the method itself.

> The continual intermeshing of data collection and analysis has direct bearing on how the research is brought to a close. When the researcher is convinced that his conceptual framework forms a systematic theory, that it is a reasonably accurate statement of the matters studied, that it is couched in a form possible for others to use in studying a similar area, and that he can publish his results with confidence, then he is near the end of his research.

Complementary Methods

Regardless of the apparent and real differences between phenomenologically and positivistically based research, when it comes to the actual gathering of data, all methods are subject to similar criteria as to its reliability and validity. This important point is made by LeCompte and Goetz (1982) in the following comment:

> The value of scientific research is partially dependent on the ability of individual researchers to demonstrate the credibility of their findings. Regardless of the discipline or the methods used for data collection and analysis, all scientific ways of knowing strive for authentic results. In all fields that engage in scientific enquiry, reliability

and validity of findings are important. (p. 31)

Further to the common criteria for credibility of research findings, LeCompte and Goetz (1982) point out that choices between subjective and objective data and other choices such as generalizability or uniqueness of results are in fact false dichotomies. These dilemmas are shared across all social science research design. They state that "the transformation of such issues into dichotomous choices is unnecessary, inaccurate, and ultimately counterproductive" (LeCompte and Goltz, 1982, p. 54). Thus, differences between methodologies become less distinct as to the goal of good research and perhaps a new perspective is required capable of integrating the dualities that are inaccurate and counterproductive.

Research in adult education, as in other social science disciplines, must be concerned with both subjective and objective meaning. Contemporary methodologies, whether they align themselves with positivistic or phenomenological philosophies, have many similarities. Empirical research has accepted the fact that verification cannot be absolute and that subjective interpretation of data within the context of theory is necessary even in the natural sciences. Also, phenomenologically based research has realized the need to establish the validity of their findings. These practices have moved the conduct of research within both paradigms closer to the common goal of valid theory.

In adult education research, consideration must be given to both theory formation as well as gathering empirical data. These two needs often require different perspectives. Caws (1965) stated that the development of a science results from a continuing dialectic between

two absolutly essential processes; rationalism and empiricism. Rationalism proceeds by "developing formal structures in a free and creative fashion" while empiricism investigates the connection of events "without special regard to the significance of those events in any total scheme of things" (Caws, 1965, p. 331).

The two processes of which Caws speaks can be found in the activities of doing research in adult education. One method may begin without formal hypotheses, spending considerable amounts of time immersed within the situation to be studied, determining interrelationships, and generating general impressions based upon data perceived to be relevant to the researcher. On the other hand, a researcher may be seen to be administering predesigned tests that can be quantified and analyzed in a predetermined manner such that a conclusion may be reached as to the probability of accepting a deduced hypothesis. The problem in adult education research is that the dialectical process is missing. No attempt is being made to reconcile seemingly diverse methodologies and findings or, more importantly, designing research projects that include different methodologies studying the same problem in order that a better understanding may be achieved through a dialectical process.

It would seem that the best chance for adult education to grow as a discipline is to adopt a paradigm that allows for a real dialectical process to take place based upon diverse findings. Such a paradigm must be capable of conceptualizing both subjective and objective realities and promote a synthesis of seemingly disparate and contradictory findings. One paradigm and general methodology capable of providing a holistic view to integrate findings is general system

theory.

A Unifying Paradigm

The more common view of social science researchers today is that theory and fact are interdependent and are a result of human activities. As Laszlo (1972) states, "empirical observation is meaningless without the imaginative envisagement of various abstract possibilities" (p. 16). Together empirical data and theory can provide a holistic view of the reality of man. For the development of an emerging and diverse discipline such as adult education, a perspective capable of providing unity within the scientific process is essential to solve the problems that exist independent of methodology. To solve complex problems requires a synthesis of divergent data, observations, and theory. Systems theory is a framework that can provide this holistic and integrative perspective.

General systems theory in its essence is concerned with the holistic interrelationship of elements. The philosophical orientation of systems theory is best viewed through assumptions about reality, knowledge (truth), and change and stability. The system (holistic) model views the system as an interconnected unity, truth as existing in the process of interaction and involving both internal and external verification, and as being dynamically stable (Battista, 1977, p. 67). This is in contrast to the positivistic (mechanistic) view that the system of concern consists of matter and energy, truth as being objective and empirically discoverable, and as being relatively static; and the phenomenolistic (organismic) view where the system of primary concern is a conscious living entity, knowledge is obtained through reflection, and is relatively stable.

The philosophical position of systems theory is particularly useful in the study of psychosocial problems prevalent in an area of study such as adult education that is known to borrow and reformulate knowledge from other disciplines. As a general methodology the systems approach to research is perhaps revealed in the following statement:

> ... it is the systems approach - emphasizing lack of disciplinary boundries, the freedom to apply knowledge and techniques gathered in one field to problems in another, or to suggest that two distinct fields are in fact one, the disciplinary freedom of the unconstrained intellect - that has been the source of dynamism and progress. (Gaines, 1979, p. 1)

One advantage of the systems paradigm as a methodology is the ability to consider and integrate the attributes of physical entities with living systems. The fact is that empirical methods can be complementary with methods that can account for the phenomena of living systems. A systems approach embodies a new method of thinking "which will add new approaches to measurement, explanation, validation, and testing" (van Gigch, 1978, p. 36).

Systems theory offers a methodology that functions as a theoretical approach to enquiry that is not necessarily oriented toward particular methods or techniques. This holistic methodology is especially useful for the study of complex systems. Allan (1978) states that "holistic methodology, with its orientation toward methods of inquiry rather than tools or techniques per se, is concerned with the basic conceptualization or definition of problems" (p. 9).

In an emerging discipline such as adult education emphasis must

be placed upon the conceptualization of problems that are better able to map the territory of adult education (Rubenson, 1982). Also, given the multidisciplinary nature of the emerging discipline of adult education and such needs as the integration of theory and practice, general systems theory can offer a methodology with guidlines to conceptualizing problems based upon a broader perspective of the territory.

As has been pointed out previously one of the central features of systems theory is the study of the interaction and interrelationship between parts of complex systems. "The notion of sytem", according to Cavallo (1979, p. 11), "explicitly entails emphasis on potential interactions among all parts that are perceived or distinguished". One area where the need to focus upon such interactions has been called for is in understanding the dynamics of dropout in higher education. It has been shown consistently that any one or group of variables accounts for only a small amount of variance. This would suggest that we have either not identified the crucial variables or, more likely, dropout occurs as a result of a complex interaction among the variables.

Returning to the apparent conflict between phenomenological and positivistic based methodologies, the two antithetical approaches are that data generates theories (induction) or that theory can exist independent of data (hypothetico-deductive). Cavallo (1979) states "that neither of these two extremes can constitute an acceptable epistemological basis for scientific inquiry, that the potential for knowledge growth resides in the tension between theoretical and empirical concerns" (p. 120). He goes on to suggest that the systems

paradigm can provide a general and comprehensive methodological framework without "faddish attachments" to particular research techniques (Cavallo, 1979). By encompassing a variety of techniques a creative tension can be realized between theoretical and empirical concerns. This is the dynamic and constructive aspect of the general systems methodological framework that facilitates the integration of different reference frames such that they become complementary.

It may be appropriate to end this section on a more philosophical note concerning the unifying aspect of systems theory. The dualities that have resulted from extreme positions such as phenomenology and logical positivism must be seen to be artifical. This is made elegantly clear in the following passage by Laszlo (1972) concerning the metaphysics of general systems theory.

> The phenomena of mind is neither an intrusion into the cosmos from some outside agency, nor the emergence of something out of nothing. ... The mind as knower is continuous with the rest of the universe as known. Hence in this metaphysics there is no gap between subject and object - these terms refer to arbitrarily abstracted entities. (p. 293)

Conclusion

This paper began by juxtaposing two philosophies of science, logical positivism and phenomenology. Although these philosophies have evolved since their inception in the 1930's, the original positions provide an understanding of the philosophical source of some of the common research methodologies employed in adult education. An overview was provided of three methodologies that span a large section of the

continuum as defined by the two previous philosophical extremes. A point was also made as to the complementary nature of methodologies for doing research in adult education. Finally, a holistic/integrative research paradigm (general systems theory) was put forth as being more constructive and useful for an emerging discipline such as adult education.

By shifting to a holistic/integrative paradigm we accept the incompletness of either-or methodological choices and begin to work toward a greater unity and clarity. The methodologies employed in adult education must be seen as being complementary and as contributing to a reality that can encompass and make comprehensible the dualities that man is so prone to create. Only by assuming a broader perspective will new and complex relations reveal themselves; and only in this way can we weave intricate patterns of our objective and subjective worlds.

Throughout this paper it has been implicitly shown that philosophy and method intertwine in the practice of research. Methods of philosophical analysis and of gathering data are common features, to greater or lesser degrees, of most methodologies. Mattimore-Knudson (1981) commenting on the role of philosophy and science suggests that differences in research of adult education are due to individual interests and approaches. He goes on to say that regardless of methodology, particular problems still exist in adult education that require solutions and perceiving "each others abilities to think in different ways is the key to the development of adult education" (Mattimore-Knudson, 1981, p. 5). In short, emphasis should be placed upon problems and not methodologies. Hopefully, then we can begin to

see the complementary nature of various methodologies capable of moving adult education through theory development to a full and rich discipline.

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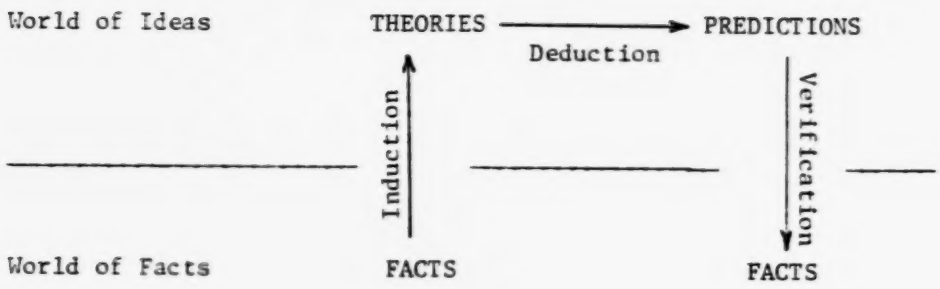

Figure 1. Cyclical method of science.